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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,250	03/12/2004	Arne C. Benson	FSI0135/US	8204
7590	07/18/2006		EXAMINER RIVELL, JOHN A	
Paul John Parins Kagan Binder, PLLC Maple Island Building 221 Main Street North, Suite 200 Stillwater, MN 55082			ART UNIT 3753	PAPER NUMBER

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/799,250	Applicant(s) BENSON ET AL.	
	Examiner John Rivell	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/12/04 (application).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09212004, 10012004</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS 07252005</u> . |

Claims 1-20 are pending.

The drawings are objected to as generally failing the requirements of 37 CFR 1.84 as the drawings appear to be informal. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 6, 9, 11, 12, 16, 17 and 20 are rejected under 35 U.S.C. §102 (b) as being anticipated by Zierden et al. (U.S. Pat. No. 4,313,624 cited by applicant).

The patent to Zierden et al., in figure 2 for example, discloses a "rotary union, comprising: a housing (13) having a fluid path (33) through which a fluid can be conveyed through the housing; a rotor (11) having a fluid path (32) through which a fluid can be conveyed through the rotor, wherein the rotor (11) is rotatably coupled (via bearing(s) 12a) to the housing (13); a post (28) having a fluid path (33) through which a fluid can be conveyed through the post (28), said post (28) being positioned in the rotary union in a manner effective to help fluidly couple the rotor fluid path (32) and the housing fluid path (33) such that a fluid can be transferred between the housing (13) and the rotor (11) via the post fluid path (33); and an annular gap (36) surrounding at least a portion of the post (28), wherein the annular gap (36) constitutes at least a portion of a drain pathway (to drain port 37) through which a portion of fluid conveyed through the housing fluid path is drained from the rotary union" as recited in claim 1.

Regarding claim 2, in Zierden et al., "at least one bearing (12a is) interposed between a portion (21) of the rotor (11) exterior and a portion (24) of the housing (13) interior" as recited.

Regarding claim 5, Zierden et al. discloses a "rotary union, comprising: a housing (13) having a base portion (at the lower end of element 13 to which hinge plate 17 is attached); a rotor (11) having a first end positioned at least partially in the housing (13) interior, wherein the rotor (11) is rotatably coupled (via bearing(s) 12a) to the housing (13); a post (28) that extends from the base (lower) portion of the housing (13) at least

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partially into a chamber (at entrance end 20) in the rotor (11), said chamber being oversized relative to the post (28) such that an annular gap (36) extends along a length of the post (28) between the post (28) and the rotor (11); a first fluid port (32 or 33) associated with the housing (13) through which a fluid can exit or enter the rotary union; a second fluid port (33 or 32) associated with the rotor (11) through which a fluid can exit or enter the rotary union; a fluid pathway extending through the rotary union at least between the first and second fluid ports, said fluid pathway comprising first and second pathway portions, wherein the first pathway portion extends through the post (28), the second pathway portion extends through the rotor (11), and wherein the first pathway portion is in fluid communication with the second pathway portion via a juncture inside the rotor chamber (at entrance end 20); and a drain pathway (to drain port 37) having an inlet (at the upper section of gap 36) inside the rotor chamber (at the entrance end 20) proximal to said juncture, wherein the annular gap (36) between the post (28) and the rotor (11) constitutes at least a portion of the drain pathway” as recited.

Regarding claim 6, in Zierden et al., “at least one bearing (12a is) interposed between a portion (21) of the rotor (11) exterior and a portion (24) of the housing (13) interior” as recited.

Regarding claim 9, in Zierden et al., “at least two bearings (12a are) interposed between a portion (21) of the rotor (11) exterior and a portion (24) of the housing (13) interior” as recited.

Regarding claim 11, in Zierden et al., as disclosed, utility is in a “fluid delivery system comprising the rotary union of claim 5, comprising: a source of fluid (attached to

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inlet 11), wherein the first fluid port (32) is fluidly coupled to the source of fluid; and a rotating point of use (at outlet conduit 35), wherein the second fluid port (33) is fluidly coupled to the rotating point of use" as recited.

Regarding claim 12, in making and/or using the device disclosed in Zierden et al. one necessarily performs a "method of using the rotary union of claim 5, comprising: fluidly coupling the first fluid port (32) to a source of process fluid; fluidly coupling the second fluid port (33) to a rotational point of use (35); and transferring process fluid from the source of process fluid to the rotating point of use" as recited.

Regarding claim 16, in making and/or using the device disclosed by Zierden et al., one necessarily performs a "method of making a rotary union comprising: providing: a housing (13) having a fluid path (33) through which a fluid can be conveyed through the housing (13); a rotor (11) having a fluid path (32) through which a fluid can be conveyed through the rotor (11); a post (28) having a fluid path (33) through which a fluid can be conveyed through the post (28); at least one bearing (12a); positioning the post (28) in the rotary union in a manner effective to help fluidly couple the rotor fluid path (32) and the housing fluid path (33) such that a fluid can be transferred between the housing (13) and the rotor (11) via the post fluid path (33); rotatably coupling the rotor (11) to the housing (13 via bearing(s) 12a) such that an annular gap (36) surrounds at least a portion of the post (28), wherein the annular gap (36) constitutes at least a portion of a drain pathway (to drain port 37) through which a portion of fluid conveyed through the housing fluid path is drained from the rotary union" as recited.

Regarding claim 17, in making and/or using the device disclosed by Zierden et

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al., one necessarily further performs a method step of “rotatably coupling the rotor (11) to the housing (13) comprises interposing at least one bearing (12a) between a portion (21) of the rotor (11) exterior and a portion (24) of the housing (13) interior” as recited.

Regarding claim 20, in making and/or using the device disclosed by Zierden et al., one necessarily further performs a method step of providing “at least two bearings (12a) interposed between a portion (21) of the rotor (11) exterior and a portion (24) of the housing (13) interior” as recited.

Claims 13-14 are rejected under 35 U.S.C. §102 (b) as being anticipated by Miwa.

The patent to Miwa, in figure 3 for example, discloses a “rotary union, comprising: a housing (1, 2, 3); a rotor (10) having a first (i.e. right) end positioned at least partially in the housing (1, 2, 3) interior, wherein the rotor (10) is rotatably coupled to the housing (1, 2, 3) via bearing(s) 7, 8); a post (the extreme right end of rotor 10) that extends from the first end of the rotor at least partially into a chamber (bore 21) in the housing (1, 2, 3), said chamber (bore 21) being oversized relative to the post such that an annular gap (23) extends along a length of the post between the post and the housing (1, 2, 3); a first fluid port (13) associated with the housing (1, 2, 3) through which a fluid can exit or enter the rotary union; a second fluid port (11) associated with the rotor (10) through which a fluid can exit or enter the rotary union; a fluid pathway extending through the rotary union at least between the first (13) and second (11) fluid ports, said fluid pathway comprising first and second pathway portions, wherein the first pathway portion extends through the housing (1, 2, 3), the second pathway portion

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extends through the post (right end of shaft 10), and wherein the first pathway portion is in fluid communication with the second pathway portion via a juncture inside the housing chamber (bore 21); and a drain pathway (to drain port 18 and/or 26) having an inlet inside the housing chamber proximal to said juncture, wherein the annular gap (23) between the post and the housing constitutes at least a portion of the drain pathway" as recited.

Regarding claim 14, in Miwa, "at least one bearing (7 or 8 is) interposed between a portion of the rotor (10) exterior and a portion of the housing (1, 2, 3) interior" as recited.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, 7, 8, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zierden et al. in view of Katsuhiko et al. (JP-11101250 cited by applicant).

The patent to Zierden et al. discloses all the claimed features with the exception of having "ball bearings made with material comprising ceramic material; and inner and

outer races made with material comprising hardened stainless steel" (claims 3, 7 and 18).

The document to Katsuhiko et al. discloses that it is known in the art to employ "ceramic" material balls 4 and "hardened stainless steel" bearing races at 2, 3 for the purpose of providing a ball bearing to reduce the occurrence of oscillation of an irrotational synchronous component, suppress the occurrence of fretting damage and to further reduce the generation of torque and the torque fluctuation.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Zierden et al. "ceramic" material ball elements and "hardened stainless steel" material ball races, in place of the materials of the balls and races of Zierden et al., for the purpose of providing a ball bearing to reduce the occurrence of oscillation of an irrotational synchronous component, suppress the occurrence of fretting damage and to further reduce the generation of torque and the torque fluctuation as recognized by Katsuhiko et al.

Regarding claims 4, 8 and 19, and the recitation requiring that "the at least one bearing is un-lubricated", Official Notice is hereby made that to eliminate the utilization of grease and thus lubrication of the ball bearing of Zierden et al., and/or Zierden et al. as modified by Katsuhiko et al., would have been an obvious thing to do if lubrication of the ball bearing is not desired. See for example, *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) (M.P.E.P. §2144.04, II).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miwa in view of Katsuhiko et al. (JP-11101250 cited by applicant).

The patent to Miwa discloses all the claimed features with the exception of having "ball bearings made with material comprising ceramic material; and inner and outer races made with material comprising hardened stainless steel".

The document to Katsuhiko et al. discloses that it is known in the art to employ "ceramic" material balls 4 and "hardened stainless steel" bearing races at 2, 3 for the purpose of providing a ball bearing to reduce the occurrence of oscillation of an irrotational synchronous component, suppress the occurrence of fretting damage and to further reduce the generation of torque and the torque fluctuation.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Miwa "ceramic" material ball elements and "hardened stainless steel" material ball races, in place of the materials of the balls and races of Miwa, for the purpose of providing a ball bearing to reduce the occurrence of oscillation of an irrotational synchronous component, suppress the occurrence of fretting damage and to further reduce the generation of torque and the torque fluctuation as recognized by Katsuhiko et al.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zierden et al. in view of Takeda (U.S. Pat. No. 5,203,592 cited by applicant).

The patent to Zierden et al. discloses all the claimed features with the exception of having "post exterior side region (having) one or more surface discontinuity".

The patent to Takeda discloses that it is known in the art to employ "surface discontinuities" at 25 in the valve body and 23 in the interiorly extending shaft for the purpose of forming a labyrinth seal at the juncture of the extending shaft and valve body precluding fluid leakage from the valve body.


It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Zierden et al., "surface discontinuities" along either the surface of the shaft or body where these parts overlap for the purpose of forming a labyrinth seal at the juncture of the extending shaft and valve body precluding fluid leakage from the valve body as recognized by Takeda.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Rivell whose telephone number is (571) 272-4918. The examiner can normally be reached on Mon.-Thur. from 6:30am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


John Rivell
Primary Examiner
Art Unit 3753

j.r.